

13C. Maintenance

Regulations: 180 NAC 4-004, 180 NAC 3-016.02.

Criteria: *Licensees must routinely clean and maintain gauges according to the manufacturer's recommendations and instructions. Individuals performing routine maintenance must have adequate training and experience. Radiation safety procedures for routine cleaning and maintenance (e.g., removal of exterior residues from the gauge housing, external lubrication of shutter mechanism, calibration, and electronic repairs) must consider ALARA and ensure that the gauge functions as designed and source integrity is not compromised.*

Non-routine maintenance or repair (beyond routine cleaning, lubrication, calibration, and electronic repairs) means any maintenance or repair that involves or potentially affects components, including electronics, related to the radiological safety of the gauge (e.g., the source, source holder, source drive mechanism, shutter, shutter control or shielding) and any other activities during which personnel could receive radiation doses exceeding the Agency limits.

Non-routine repair or maintenance must be performed by the fixed gauge manufacturer or distributor or a person specifically authorized by the Agency, an Agreement State or the NRC. Information to support requests for specific authorization to perform non-routine maintenance or repair is addressed in Appendix P.

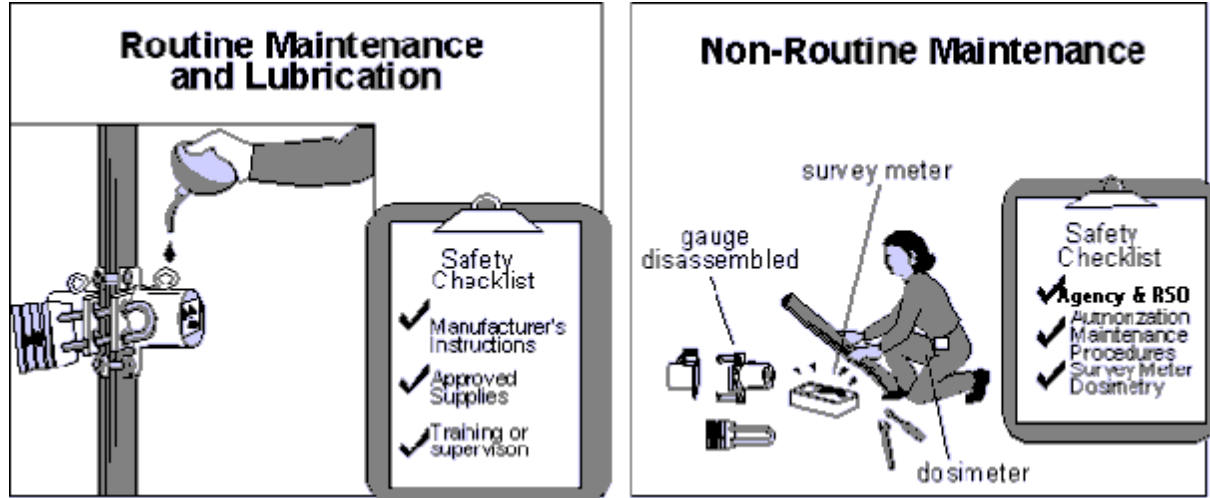


FIGURE 9 **Maintenance.** Licensees need to perform routine maintenance to ensure proper operation of the fixed gauge. For non-routine maintenance, most licensees rely on the gauge manufacturer, distributor or other service companies.

Discussion: The Agency permits fixed gauge licensees to perform routine maintenance of the gauges provided that they follow the gauge manufacturer's or distributors written recommendations and instructions. Generally, before any maintenance or repair work is done, licensees need to determine (and assure themselves of the adequacy of) the following:

- The tasks to be performed
- The protocol or procedures to be followed

- The radiation safety procedures including possible need for compensatory measures (e.g., steps taken to compensate for lack of or reduced shielding)
- ALARA considerations
- Training and experience of personnel performing the work

- The qualification of parts, components, other materials to be used in the gauge
- The tests (to be performed before the gauge is returned to routine use) to ensure that it functions as designed.

Although manufacturers or distributors may use different terms, "routine maintenance" includes, but is not limited to, cleaning, lubrication, calibration, and electronic repairs.

Routine maintenance does **not** include any activities that involve:

- Components, including electronics, related to the radiological safety of the gauge (e.g., the source, source holder, source drive mechanism, shutter, shutter control or shielding)
- Installation, relocation, or alignment of the gauge
- Initial radiation surveys
- Replacement and disposal of sealed sources
- Removal of a gauge from service
- A potential for any portion of the body to come into contact with the primary radiation beam
- Any other activity during which personnel could receive radiation doses exceeding the Agency limits

Mounting a gauge is unpacking or uncrating the gauge, and fastening, hanging, or affixing the gauge into position before using. Mounting does not include electrical connection, activation, or operation of the gauge. Installing a gauge includes mounting, electrical connection, activation, and first use of the device. Specific Agency, Agreement State or NRC authorization is required to install a gauge. However, a licensee may initially mount a gauge, without specific Agency, Agreement State or NRC authorization, if the gauge's SSD Certificate explicitly permits it and under the following guidelines:

- The gauge must be mounted according to written instructions provided by the manufacturer or distributor
- The gauge must be mounted in a location compatible with the "Conditions of Normal Use" and "Limitations and/or Other Considerations of Use" in the certificate of registration issued by the Agency, NRC or an Agreement State
- The on-off mechanism (shutter) must be locked in the off position, if applicable, or the source must be otherwise fully shielded
- The gauge must be received in good condition (package was not damaged)
- The gauge must not require any modification to fit in the proposed location.

The source must remain fully shielded and the gauge may not be used until it is installed and made operational by a person specifically licensed by the Agency, NRC or an Agreement State to perform such operations.

A condition in the Agency license will state that operations such as installation, initial radiation survey, repair, and maintenance of components related to the radiological safety of the gauge, gauge relocation, replacement, and disposal of sealed sources, alignment, or removal of a gauge from service shall be performed only by the manufacturer, distributor or other persons specifically licensed by the Agency, NRC or an Agreement State to perform such services. Most

licensees do not perform non-routine operations. Rather, these licensees rely upon persons specifically licensed by the Agency, NRC or an Agreement State who have the specialized equipment and technical expertise needed to perform these activities. Applicants seeking authorization to perform non-routine operations must submit specific procedures for review. See Appendix P for more information.

Response from applicant:

Routine cleaning and lubrication: Submit either of the following:

- A statement that: "We will implement and maintain procedures for routine maintenance of our gauges according to each manufacturer's recommendations and instructions."

OR

- Alternative procedures for the Agency's review.

And

Non-routine maintenance or repair operations that require detaching the source or source rod from the gauge: Submit either of the following:

- A statement that: "The gauge manufacturer, distributor or other person authorized by the Agency, the U.S. Nuclear Regulatory Commission or other Agreement State will perform non-routine operations such as installation, initial radiation survey, repair, and maintenance of components related to the radiological safety of the gauge, gauge relocation, replacement, and disposal of sealed sources, alignment or removal of a gauge from service."

OR

- A statement that: "We will provide needed information to support request to perform non-routine maintenance per Appendix P of Regulatory Guide 3.13 "Radioactive material Guidance for Fixed Gauge Licenses." **And** Submit non-routine maintenance procedures for the Agency's review. See Appendix P for the criteria to be used."